CLAIMS

WHAT IS CLAIMED IS:

1.   A method for analyzing operational parameter data from a locomotive to correct and/or prevent locomotive malfunctions, the method comprising:

receiving a set of operational parameter data from the locomotive;

identifying a plurality of distinct anomaly definitions in the set of operational parameter data;

generating at least one distinct anomaly cluster from the plurality of distinct anomaly definitions; and

associating with said anomaly cluster at least one repair for correcting and/or preventing occurrence of the locomotive malfunction.

2.   The method of claim 1 further comprising generating a plurality of weighted repair and distinct anomaly cluster combinations indicative of distinct locomotive malfunctions.

3.   The method of claim 1 wherein the associating with said anomaly cluster of at least one repair comprises using the plurality of weighted repair and distinct anomaly cluster combinations to associate said at least one repair for the at least one distinct anomaly cluster.

4.   The method of claim 1 wherein the at least one distinct anomaly cluster comprises at least one of a single distinct anomaly and a plurality of distinct anomaly definitions.

5.   The method of claim 1 wherein each of the plurality of weighted repair and distinct anomaly cluster combinations are generated from a plurality of cases, each case comprising a repair and at least one distinct anomaly, and each of the plurality of weighted repair and distinct anomaly cluster combinations being assigned a weight determined by dividing the number of times the combination occurs in cases comprising related repairs by the total number of times the combination occurs in said plurality of cases.

6.   The method of claim 5 wherein identifying the at least one repair comprises selecting at least one repair using the plurality of weighted repair and anomaly cluster combinations and adding assigned weights for distinct anomaly clusters for related repairs.

7.   The method of claim 1 wherein said generating a plurality of weighted repair and distinct anomaly cluster combinations comprises using a plurality of repairs and operational parameter data including a plurality of anomaly definitions.

8.   The method of claim 1 wherein the receiving operational parameter data comprises receiving a new operational parameter data and comparing the new operational parameter data to a prior operational parameter data.

9.   A system for analyzing operational parameter data from a malfunctioning locomotive, comprising:

a directed weight data storage unit adapted to store a plurality of weighted repair and distinct anomaly cluster combinations;

a processor adapted to receive new operational parameter data comprising a plurality of anomaly definitions from the malfunctioning locomotive;

a processor for selecting a plurality of distinct anomaly definitions from the new operational parameter data;

a processor for generating at least one distinct anomaly definition cluster from the selected plurality of distinct anomaly definitions;

a processor for generating a plurality of weighted repair and distinct anomaly definition cluster combinations; and

a processor for identifying at least one repair for the at least one distinct anomaly definition cluster using the plurality of predetermined weighted repair and distinct anomaly definition cluster combinations.

10.   The system of claim 9 wherein a single processor unit constitutes said processors.

11.   The system of claim 9 further comprising:

a processor for generating a plurality of cases from the repair data and the operational parameter data, each case comprising a repair and a plurality of distinct anomaly definitions;

a processor for generating, for each of the plurality of cases, at least one repair and distinct anomaly definition cluster combination; and

a processor for assigning, to each of the repair and distinct anomaly definition cluster combinations, a weight, whereby weighted repair and distinct anomaly definition cluster combinations facilitate identification of at least one repair for the malfunctioning locomotive.

12.   The system of claim 11 wherein the processor for generating the plurality of cases comprises a processor for selecting a repair from the repair data and selecting a plurality of distinct anomaly definitions from the operational parameter data over a period of time prior to the repair.

13.   The system of claim 11 wherein the processor for assigning weights comprises a processor for determining, for each repair and distinct anomaly definition cluster combination, a number of times the combination occurs in cases comprising related repairs, and a number of times the combination occurs in the plurality of cases.

14.   The system of claim 13 wherein the processor for assigning a weight, for each repair and distinct anomaly definition cluster combination, comprises a processor for dividing the number of times the combination occurs in cases comprising related repairs by the number of times the combination occurs in the plurality of cases.

15.   The system of claim 13 further comprising;
a processor for generating a new case from repair data and operational parameter data, the case comprising a repair and a plurality of distinct anomaly definitions;
a processor for generating, for the new case, a plurality of anomaly definition clusters for the plurality of distinct anomaly definitions; and
a processor for redetermining a weight for each of the plurality of repair and anomaly definition cluster combinations to include the new case.

16.   The system of claim 9 further comprising:
a repair log data storage unit adapted to store a plurality of repairs; and
an operational parameter data storage unit adapted to store a plurality of anomaly definitions.